

# Chemistry 2211 – Organic Chemistry I

## Spring 2023

---

### Instructor:

Dr. Richard Hubbard

### Office Hours

TWR 2:00 PM – 3:00 PM  
SLC 119B

### Email

[chemburn@uga.edu](mailto:chemburn@uga.edu)

### Lectures:

CRN: 23395

MWF 11:30 AM – 12:20 PM

SLC room 85

---

**Required Textbook:** *Organic Chemistry* by Paula Yurkanis Bruice (8th edition, 2016)

### **Required Ancillaries:**

- *Study Guide and Solutions Manual for Paula Yurkanis Bruice Organic Chemistry*, 8th edition.
- *Learning Catalytics*.
- ChemBioDraw is **required** for use in labs. Download for Mac and PC free at:  
[https://eits.uga.edu/hardware\\_and\\_software/software/chembiooffice/](https://eits.uga.edu/hardware_and_software/software/chembiooffice/). It may be accessed from any platform browser using UGA vLab: <https://eits.uga.edu/support/vlab/>

**Recommended:** Molecular Model Set marketed for “organic chemistry” (Duluth Labs Organic Chemistry Model Student Kit, for example).

**Attendance:** CHEM 2211 is a rigorous and fast-paced course. You are required to attend all lectures. Attendance will be taken at the beginning of the lecture period by scanning your UGA MyID. If you do not have your UGA MyID you will not receive credit for lecture attendance. Absences will seriously affect your grade. If you attend at least 80% of lectures throughout the semester when attendance is taken you will be eligible for up to 20 class participation points\* (graded based upon participation **and** accuracy – see below). \*In-class participation questions will be asked via *Learning Catalytics* to encourage engagement and to promote time-management and critical thinking skills.

**Assigned Problems:** To be successful in CHEM 2211 you must routinely work all of the assigned problems. You will be more successful if you work a few problems daily rather than all of the problems immediately prior to the exam. Use the solutions manual only after you have thoughtfully and carefully considered related lecture and textbook presentations of the material.

**Prerequisites:** CHEM 1212/1212L, CHEM 1312H/1312L, or CHEM 1412/1412L. It is important to recognize that material presented in CHEM 2211 will expand upon the information you learned in your prerequisite courses. In addition, organic chemistry has a cumulative nature to it. Concepts presented early in the semester are further developed throughout the semester. Consequently, homework and exam materials require mastery of earlier material. Falling behind will negatively impact your course performance.

**Hour Exams:** Four 90-minute exams, each graded out of 100 points, will be administered Wednesday nights during a 7:30-9:45 PM exam period.

Wednesday	February 1, 2023	8:00 p.m. to 9:30 p.m.
Wednesday	March 1, 2023	8:00 p.m. to 9:30 p.m.
Wednesday	April 5, 2023	8:00 p.m. to 9:30 p.m.
Wednesday	April 26, 2023	8:00 p.m. to 9:30 p.m.

Your lowest exam grade of the semester will be dropped. **There are no makeup exams. If you do not arrive on time for an exam or miss an exam for any reason, that will be the exam that is dropped from the final grade calculation.**

**Final Exam:** A 120-minute comprehensive final exam worth 130 points is scheduled for **Thursday, May 4, 2023 from 7:00 PM – 10:00 PM.** The final exam is mandatory. You must have your ID with you to take the final exam. If you do not take the final exam you will be assigned a final exam score of zero.

**Exam Requirements:** Students are required to bring their UGA ID with them to the exam site. Students who do not have their ID with them the night of an exam will automatically have 2% deducted from their exam total. **Students must arrive on time to each exam (7:45 PM). If you arrive late to an exam, it will automatically become your drop test.** Students registered with the DRC must have their accommodations in place at least one week prior to the exam in order for accommodations to be applied.

**Classroom Responses:** Class response credit will be based upon your in-class responses using *Learning Catalytics*. In-class questions will be asked at random during the semester. **At the end of the semester, the in-class questions that you answered correctly will be converted into a corresponding number of points out of a possible 20 and will be factored into the 450 total points for the semester, provided you have attended at least 80% of your lectures.**

**Exam Corrections and Regrades:** We endeavor to grade exams consistently and accurately. However, if your exam is mistakenly marked as incorrect but your answer is in complete agreement with the posted exam key on eLC, you may reply from each question in GradeScope with a brief description of your issue. We will make any necessary grading and totaling correction(s) and your corrected total will appear on eLC when the subsequent exam scores are uploaded. BE CAREFUL! If we find that there is no error in grading or totaling, 5 points will be deducted from your exam total for each unnecessary question submission. “Grading correction” requests are accepted until 5 PM Friday the week graded exams are returned. **I do not respond to credit questions pertaining to the exam until after the resubmission deadline has expired.**

**Final Grade Determination:** If you score below 50% on the final exam, you will receive an ‘F’ for the course. If you score 50% or higher on the final exam, your final grade will be based on the **total points** earned out of **450 total possible points**, summing the **best three hour-exam scores (300 total possible points)**, the **final exam score (130 total possible points)**, and **up to 20 possible points for classroom responses using your Learning Catalytics app**. Final grade assignments are determined using the following scheme:

<b><u>Range</u></b>	<b><u>Points (out of 450)</u></b>	<b><u>Approximate %</u></b>
<b>A</b>	394-450 total points	87.5% - 100%
<b>A-</b>	382-393 total points	85.0% - 87.4%
<b>B+</b>	371-381 total points	82.5% - 84.9%
<b>B</b>	326-370 total points	72.5% - 82.4%
<b>B-</b>	315-325 total points	70.0% - 72.4%
<b>C+</b>	304-314 total points	67.5% - 69.9%
<b>C</b>	270-303 total points	60.0% - 67.4%
<b>D</b>	225-269 total points	50.0% - 59.9%
<b>F</b>	0-224 total points	< 50.0%

**Withdrawal Policy:** The mid-point of the semester is Thursday, March 2, 2023. The last day to withdraw from CHEM 2211 and 2211L is Thursday, March 23, 2023. A grade of ‘W’ is assigned to all withdrawals made prior to the withdrawal deadline, irrespective of performance in the course. Withdrawal is accomplished via the **Athena** system. You are not required to receive approval from your instructor. Go to the withdrawal section of Athena and follow the instructions. CHEM 2211 and CHEM 2211L are corequisite courses. **You may not remain enrolled in CHEM 2211L if you withdraw from CHEM 2211. There are no exceptions to this policy.** After the mid-semester withdrawal deadline (Thursday, March 23, 2023) no student may withdraw from CHEM 2211/2211L except in the case of an approved hardship withdrawal that is authorized and accomplished by the Office of Student Services: <http://reg.uga.edu/policies/withdrawals>.

**Incomplete Policy:** An incomplete grade, “I”, may be assigned to students that are passing CHEM 2211 but are unable to complete **all** of their university coursework during the current semester due to unforeseen personal and/or medical circumstances. An incomplete grade is not assigned to students who are able to complete their university coursework but choose not to complete chemistry due to poor performance. Franklin College bylaws state that students who are failing a course are ineligible to be assigned an ‘I’. In order to receive an incomplete in the class you must meet with your lecture professor and sign a contract which stipulates the terms and conditions of all university approved Incompletes.

**Grading and Partial Credit:** The Franklin College Bylaws state, “The standards by which grades are assigned, the number and relative weight of assignments on which grades are based, and decisions to allow students to makeup or retake exams or assignments missed for, or otherwise compromised by the student’s personal circumstances are solely within the discretion of the instructor.” Grading and partial credit decisions made by instructors are final.

**Email Etiquette:** The course instructor receives a large number of student emails per day (50+) and responds as quickly and completely as possible. Do not send email to eLC accounts. I may be reached via the primary email address listed above. I do not respond to email questions that are answered in

the course syllabus or posted on eLC. You must allow at least 24hrs for a response due to the volume of emails that instructors receive on a daily basis. Do not expect an instant answer. Your emails must be both courteous and coherent. I will not reply to emails that are discourteous or indecipherable (slang, misspellings, etc...). Experience has demonstrated that it is not effective to answer homework or concept questions via email. In order to receive help concerning class work or homework you must visit your individual professor during their regularly scheduled office hours.

**Login to eLC:** To Login to eLearning Commons, you will need a UGA MyID. If you have a UGAmail account, your UGAmail login and password will be your UGA MyID login and password. If you do not have a UGA MyID, go to <http://www.uga.edu/myid> and request one online. If you have an account and have forgotten your password, you can also reset your password by going to this site. **eLearning Commons is for scholarly communication only. It is not a complaint box or an advertising forum.** Course and grading concerns should be individually addressed during office hours with the lecture professor. Inappropriate use of eLearning Commons will result in revocation of eLC privileges for CHEM 2211 and possible dismissal from the course.

**Academic Honesty:** As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at: [www.uga.edu/honesty](http://www.uga.edu/honesty). Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. **A student who is found to be in violation of the academic honesty policy will be assigned an 'F' grade for the course.** Remote participation for in-class responses is considered a violation of the Academic Honesty policy and may result in removal from the course. Questions related to course assignments and the academic honesty policy should be directed to the instructor.

**Family Educational Rights and Privacy Act (FERPA):** The Family Educational Rights and Privacy Act of 1974 (FERPA) protects the privacy of student education records and allows the student to determine what information should be confidential, and who should have access to that information. Professors cannot discuss the academic standing or progress of a student with anyone other than authorized university personnel unless a release is granted by the student. Professors cannot respond to academic standing or progress emails unless they originate from the student's UGA email account. On occasion professors receive phone calls from parents and other concerned family members requesting information regarding student progress. Your professor will direct them to the student to obtain authorization prior to release of any protected information.

**Course Syllabus:** The course syllabus is a general plan for the course. Deviations announced to the class and/or placed on eLC by the instructor may be necessary.

## APPROXIMATE COURSE SCHEDULE

### Reading Assignment

### Problem Assignment

Chapter 1 – Electronic Structure & Bonding (Brief Introduction/ Review) 1-48, 51-53, 57-64, 66-74, 78

Chapter 2 – Acids & Bases (Brief Introduction/Review) 1-52, 53-61, 65-68, 70-74  
Acids/Bases Tutorial

Chapter 3 – Introduction to Organic Compounds 1-54, 55, 57-62, 64, 67-74,  
76-83, 85-87, 89

**EXAM 1** **Wednesday, February 1, 2023** **8:00 - 9:30 PM**

Chapter 13 – Introduction to IR, Mass Spec 1-33, 41, 43, 45-50, 54- 64,  
67, 69, 71, 74

Chapter 4 – Isomers (Stereochemistry) 1-64, 65-74, 79, 82, 84, 85,  
87-89, 92-94, 97, 99-105

Chapter 14 – Introduction to  $^{13}\text{C}$ NMR Spectroscopy and  $^1\text{H}$ NMR 1-44, 47, 49, 51, 53-58, 60-  
67, 70-71, 74-79

**EXAM 2** **Wednesday, March 1, 2023** **8:00 - 9:30 PM**

Chapter 5 – Alkenes: Structure & Nomenclature; Reactivity & Kinetics 1-38, 39-44, 46, 48, 49, 51-  
58, 60, 62, Arrows Tutorial

Chapter 6 – Reactions of Alkenes & Stereochemistry of Addition 1-54, 55-71, 73, 74, 76-82,  
84-91, 94-96, 100-103

Chapter 7 – Reactions of Alkynes & Introduction to Synthesis 1-28, 29-39, 41, 43-52, 55-60

**EXAM 3** **Wednesday, April 5, 2023** **8:00 - 9:30 PM**

Chapter 8 – Delocalization of Electrons & Aromaticity 1-60, 61-66, 68, 69, 71-83,  
85, 89- 95, 97-103, 109  
Resonance Tutorial

Chapter 9 – Substitution & Elimination Reactions 1-66, 67-80, 82-91, 93-107,  
109-113, 115-121, 123-131

Chapter 12 – Radical Reactions 1-25, 26-27, 29-31, 33-34,  
36-40, 42, 43, 47, 49-51,  
Curved Arrows Tutorial

**EXAM 4** **Wednesday, April 26, 2023** **8:00 - 9:30 PM**

**FINAL EXAM** **Thursday, May 4, 2023** **7:00 - 10:00 PM**

## **CHEM 2211 Learning Objectives**

Upon successful completion of this course students will be able to:

- Use common and systematic nomenclature protocols to name alkanes, alkenes, alkynes, haloalkanes, ethers, amines and alcohols;
- Name and identify common functional groups;
- Name and identify structural subunits for organic compounds;
- Represent 3-D structures using Newman Projections, Fischer Projections, perspective structures, Haworth structures, sawhorse structures, and cyclohexane chair and boat conformers;
- Identify and distinguish between constitutional isomers, conformational isomers, configurational isomers, enantiomers, and diastereomers;
- Determine and calculate energy differences between stereoisomers;
- Construct reaction profiles for substitution and addition reactions that demonstrate  $\Delta G^\circ$  energies for exothermic reactions, endothermic reactions, activation energies, reaction intermediates, transition states and rate-determining reaction steps;
- Recognize and use electrophilic addition reactions for alkenes and alkynes;
- Devise brief synthetic transformations for alkenes and alkynes using electrophilic addition reactions and functional group interconversions;
- Write mechanisms for synthetic transformations using the curved arrow formalism;
- Describe electron delocalization for organic compounds and ions and the resultant impact on reactivity;
- Identify aromatic compounds and antiaromatic compounds and describe their molecular orbital profiles;
- Predict competing reaction outcomes for  $S_N2$ ,  $S_N1$ , E2 and E1 reactions;
- Describe reactions involving radicals and predict their products;
- Elucidate organic structures using mass spectrometry, infrared spectroscopy, UV/Vis spectroscopy, and NMR spectroscopy.

## **Mental Health and Wellness Resources:**

- If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit <https://sco.uga.edu>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
- UGA has several resources for a student seeking mental health services (<https://www.uhs.uga.edu/bewelluga/bewelluga>) or crisis support (<https://www.uhs.uga.edu/info/emergencies>).
- If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (<https://www.uhs.uga.edu/bewelluga/bewelluga>) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
- Additional resources can be accessed through the UGA App.